

**A METHOD AND APPARATUS FOR PERFORMING INTEGER MULTIPLY  
OPERATIONS USING PRIMITIVE MULTI-MEDIA OPERATIONS THAT  
OPERATE ON SMALLER OPERANDS**

**ABSTRACT OF THE DISCLOSURE**

Integer multiply operations using data stored in an integer register file are performed using multi-media primitive instructions that operate on smaller operands. The present invention performs a multiply operation on a 32-bit or 64-bit value by performing multiply operations on a series of smaller operands to form partial products, and adding the partial products together. Data manipulation instructions are used to reposition 16-bit segments of the 32-bit operands into positions that allow the multi-media parallel multiply instructions to compute partial products, and the partial products are then added together to form the result. In every embodiment, the present invention achieves better latencies than the prior art method of performing integer multiply operations provided by the IA-64 architecture.

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